different sharp layers can be selected to represent said viewing direction, after which the images thus selected can be presented on the display—in reference to above, e.g. simultaneously, in succession, as a combination image or as a moving image.

Use of the weighting factor as discussed above may enhance the effect of different viewing angles by emphasizing columns that have a primary x-ray travel path more in line with the viewing angle of the panoramic curve at a given point P.

Using weighting factors also contributes to the possibility to use wider detector surfaces than commonly used in dental frame panorama applications. When the prior art summing of the frame data is based on some standard overlapping procedure, the more likely it becomes that columns that are summed together do not represent the same section of the anatomy the further one goes from the centre of the detector. This is due to the summing protocol not knowing the exact changes in the overall imaging geometry during the exposure process, i.e. the changes there are in mutual positions and orientations of the imaging means and the layer desired to be generated. When using the principles discussed here, though, blurring of the panoramic image due to adding information to the columns C of the panoramic image **200** representing altering locations of the anatomy can be avoided. The weighting factor can also be used to compensate for an altering magnification.

Concerning embodiments of the invention, one possibility to create an illusion of turning an imaged anatomy is to use only one virtual panorama curve yet generate various panoramic images based on it by systematically changing orientation of the local viewing direction vectors D of points P discussed above. Overall, it is clear that the scope of the invention in view of displaying the imaged anatomy based on a frame data acquired in a single panoramic imaging scan includes any combination of modifying the virtual panorama curve **400** and orientation of the local direction vectors D of points P, including modifying only a selected number of the vectors D, so as to display different layers of the anatomy and from different angles of view, or only either of these.

The embodiments discussed here make it possible to use for dental frame panoramic imaging a dental panoramic imaging apparatus which includes an x-ray source having a focus and an image detector having a number of pixel columns, the x-ray source and the image detector being arranged to the apparatus at a first distance from each other, a drive means for moving the x-ray source and the detector around a patient's head, a control system including means to control the apparatus to take several individual overlapping frames along a dental arch, in which the detector is implemented as wide or wider than a second distance and the control system is arranged to control the apparatus to take frames whose width is equal to the second distance, the second distance being of about 2-10% of said first distance.

Here, the distance between the x-ray source and the image detector may preferably be about 500-550 mm.

A further advantage is that in cases, one will be able to display anatomies which otherwise could not be made visible, not at least without exposing the patient to a further panoramic irradiation process. When one is able to change the angle of view, details of the imaged anatomy may become visible which otherwise would not be visible. For example, a tooth filling may hamper getting a tooth on the other side of the dental arch visible, but changing the viewing direction may be able to bring such tooth visible after all.

Shown in FIG. **7** is a schematic drawing which illustrates a hardware configuration of an information handling/computer system by which embodiments of the invention may be realized. System **1000** of FIG. **7** comprises at least one processor or central processing unit (CPU) **1010**. The CPUs **1010** are interconnected via system bus **1012** to various devices such as a random access memory (RAM) **1014**, read-only memory (ROM) **1016**, and an input/output (I/O) adapter **1018**. The I/O adapter **1018** can connect to peripheral devices, such as disk units **1011** and tape drives **1013**, or other program storage devices that are readable by system **1000**. System **1000** can read the inventive instructions on the program storage devices and follow these instructions to execute the methodology of the embodiments herein. The system further includes a user interface adapter **1019** that connects a keyboard **1015**, mouse **1017**, speaker **1024**, microphone **1022**, and/or other user interface devices such as a touch screen device (not shown) to the bus **1012** to gather user input. Additionally, a communication adapter **1020** connects the bus **1012** to a data processing network **1025**, and a display adapter **1021** connects the bus **1012** to a display device **1023** which may be embodied as an output device such as a monitor, printer, or transmitter, for example.

Thus, a further embodiment includes a dental panoramic imaging apparatus which includes an x-ray source having a focus and an image detector having a number of pixel columns, the x-ray source and said image detector being arranged to the apparatus at a distance from each other, a drive means for moving the x-ray source and the detector around a patient's head, a control system including means to control the apparatus to take several individual overlapping frames along a dental arch, and a user interface to send control commands to said control system, the control system including recorded information on location and orientation of the x-ray source and the x-ray detector at times when taking the frames, and a means for calculating a panoramic image by summing information of the frames with respect to said information so as to generate panoramic images as viewed from at least two different directions, the user interface including a means to give at least one control command relating to showing the at least two panoramic images as viewed from the at least two different directions.

The foregoing description of the specific embodiments will so fully reveal the general nature of the embodiments herein that others can, by applying current knowledge, readily modify and/or adapt for various applications such specific embodiments without departing from the generic concept, and, therefore, such adaptations and modifications should and are intended to be comprehended within the meaning and range of equivalents of the disclosed embodiments. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation. Therefore, while the embodiments herein have been described in terms of preferred embodiments, those skilled in the art will recognize that the embodiments herein can be practiced with modification within the spirit and scope of the appended claims.

The invention claimed is:

1. A method for generating a digital dental panoramic image, comprising:

using several individual overlapping frames (**300**) taken along a dental arch by a dental panoramic x-ray imaging apparatus, said apparatus including:

an x-ray source for generating an x-ray beam and having a focus, and

an image detector having pixel columns and said frames (**300**) being taken by moving the x-ray source and the image detector around a patient's head, and